Thermoelectric Cooled HgCdTe (MCT)

They offer high performance, with ease of operation. Standard detectors are optimized in the 2µm to 5µm wavelength. Extended range detectors operate in the wavelength region beyond 5µm. Optically Enhanced detectors are available with both reflective and refractive optical elements to improve the collection efficiency of these devices. The apparent enhanced responsivity and D*, of theses detectors, relies on the ability of the optical components to refocus energy, which might not normally be incident, on the detector element. These devices are most suitable for applications in which the energy incident is either collimated or diverging. The optically enhanced detectors are, therefore, ideally suited for applications in which fiber optics are employed.

Typical Applications:
- Thermal Imaging
- Laser Detection
- Gas Analysis
- Railroad Hot Boxes
- Line Scanner

The detectors are mounted on two-stage, three-stage, or four-stage coolers in TO style packages as shown in the tables below. A thermistor is included in the package for temperature monitoring or for temperature control. Soldered windows and welded caps are used to hermetically seal the packages. The packages are backfilled with inert gas for more efficient cooler operation.

They can be supplied with the following accessories: preamplifiers, power supplies and temperature controllers.

Standard TE Cooled HgCdTe Detectors

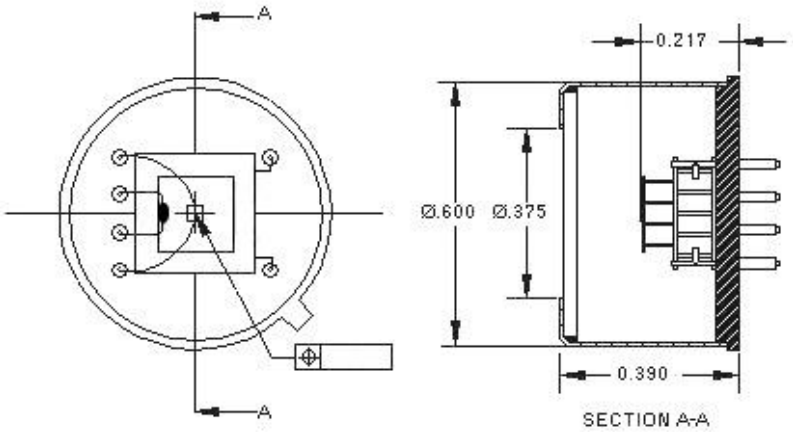
Model Number	Element Size (mm)	Wave-length Peak λp (µm)	Wavelength Response (20% λco) (µm)	D* (λp,10000,1) Jones	Resistance (Ω)	Time Constant (µsec)	Oper. Temp. (K)	Std. Pkg.	Std. Window
2 µm to 5 µm									
MCT-3.5-TE2-0.25 MCT-3.5-TE2-1.00	0.25 X 0.25 1.00 X 1.00	~3.0	≥ 3.5	≥ 1.0E11	200-1200	≤ 2	240	2-Stage TO-3 TO-8 TO-66	Sapphire
MCT-4.5-TE2-0.25 MCT-4.5-TE2-1.00	0.25 X 0.25 1.00 X 1.00	~4.0	≥ 4.5	≥ 4.0E10					
MCT-5-TE2-0.10 MCT-5-TE2-0.25 MCT-5-TE2-0.50 MCT-5-TE2-1.00	0.10 X 0.10 0.25 X 0.25 0.50 X 0.50 1.00 X 1.00	~4.5	≥ 5.0	≥ 2.0E10	100-1000				
MCT-5-TE2-2.00	2.00 X 2.00			≥ 1.0E10					
MCT-4.5-TE3-0.25 MCT-4.5-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~4.0	≥ 4.5	≥ 6.0E10	200-1200		215	3-Stage TO-3 TO-8 TO-66	
MCT-5-TE3-0.10 MCT-5-TE3-0.25 MCT-5-TE3-0.50 MCT-5-TE3-1.00	0.10 X 0.10 0.25 X 0.25 0.50 X 0.50 1.00 X 1.00	~4.5	≥ 5.0	≥ 3.0E10	100-1000				
MCT-5-TE3-2.00	2.00 X 2.00			≥ 2.0E10					
MCT-5-TE4-0.10 MCT-5-TE4-0.25 MCT-5-TE4-0.50 MCT-5-TE4-1.00	0.10 X 0.10 0.25 X 0.25 0.50 X 0.50 1.00 X 1.00			≥ 6.0E10			200	4-Stage TO-3	
MCT-5-TE4-2.00	2.00 X 2.00			≥ 4.0E10					

Extended Range TE Cooled HgCdTe Detectors

Model Number	Element Size (mm)	Wave-length Peak λp (µm)	Wavelength Response (20% λco) (µm)	D* (λp,10000,1) Jones	Resistance (Ω)	Time Constant (µsec)	Oper. Temp. (K)	Std. Pkg.	Std. Window
> 5 µm									
MCT-6-TE3-0.25 MCT-6-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~5.5	≥ 6.0	≥ 1.5E10	100-1000	≤ 2	220	3-Stage TO-3 TO-66	AR Coated ZnSe
MCT-7.5-TE3-0.25 MCT-7.5-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~6.5	≥ 7.5	≥ 5.0E9					
MCT-8-TE3-0.25 MCT-8-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~7.0	≥ 8.0	≥ 2.0E9					
MCT-9-TE3-0.25 MCT-9-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~8.0	≥ 9.0	≥ 1.0E9					

Optically Enhanced TE Cooled HgCdTe Detectors

Model Number	Element Size (mm)	Wave-length Peak λp (µm)	Wavelength Response (20% λco) (µm)	D* (λp,10000,1) Jones	Resistance (Ω)	Time Constant (µsec)	Oper. Temp. (K)	Std. Pkg.	Std. Window
> 5 µm									
OE-MCT-6-TE3-0.25 OE-MCT-6-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~5.5	≥ 6.0	≥ 8.0E10	100-1000	≤ 2	220	3-Stage TO-3 TO-66	AR Coated ZnSe
OE-MCT-7.5-TE3-0.25 OE-MCT-7.5-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~6.5	≥ 7.5	≥ 2.0E10					
OE-MCT-8-TE3-0.25 OE-MCT-8-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~7.0	≥ 8.0	≥ 8.0E9					
OE-MCT-9-TE3-0.25 OE-MCT-9-TE3-1.00	0.25 X 0.25 1.00 X 1.00	~8.0	≥ 9.0	≥ 4.0E9					



Typical Thermoelectric Cooled MCT (2-Stage)